A SMART Future for Army Aviation

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June 14, 1999

Chronology of Aviation Acquisition

CH-53

- 8 step tooling process
- 35%1st time component fit
- Draftsmen to create drawing

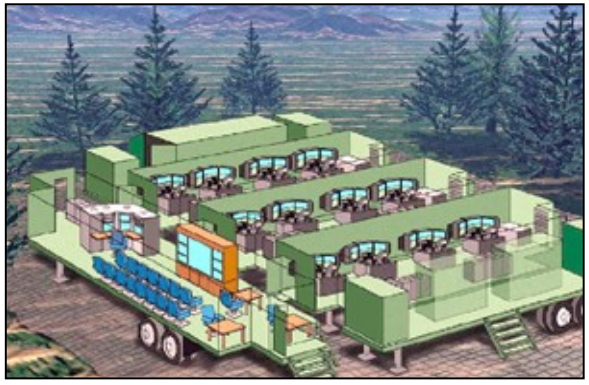
AH-64D

RAH-66

- 2 step tooling process
- 95% 1st time component fit
- Computer aided design

Apache AH-64D Lessons Learned

Longbow Crew Trainer



Collective Crew Training System

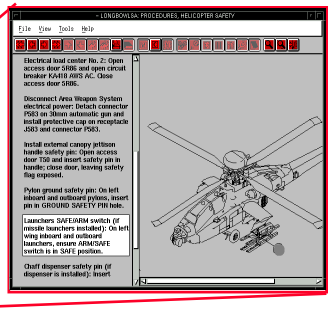
Training Capability Not Fielded Simultaneously w/Platform: Now Being Addressed!

L-6
Airframe/Powertrain
Maintenance Trainer

L-7
Troubleshooting
Maintenance Trainer

Apache AH-64D Lessons Learned

Interactive Electronic Technical Manual…



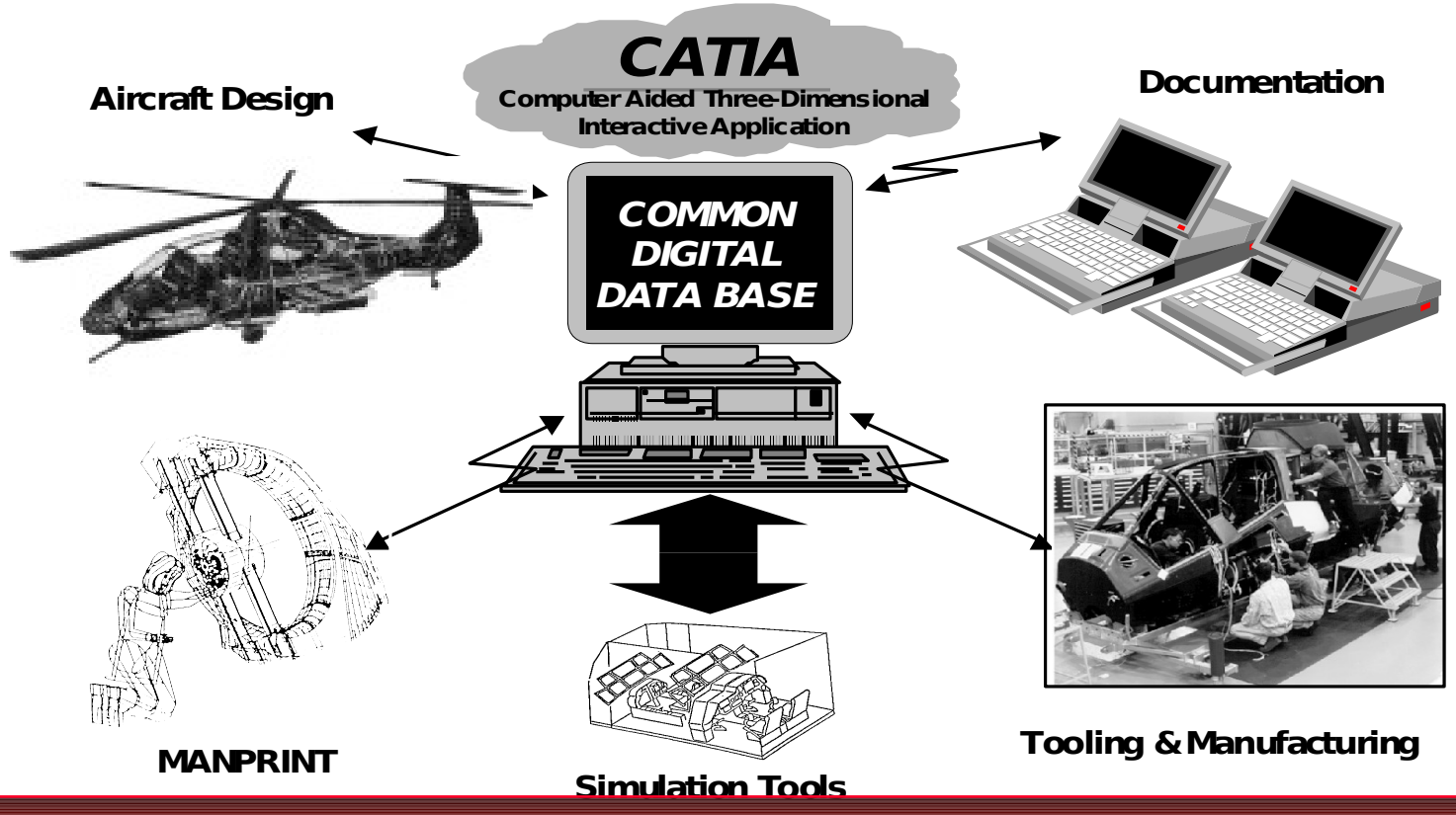
★ ***World's First Class IV IETM***

Paperless Training…

- ***Deployable Training***
- ***Distance Learning***
- ***Home Station Training***

Comanche Lessons Learned

DIGITAL DESIGN PROCESS



"What are we really flying? An aircraft or a computer?"
Hans Mark, DDR&E

Comanche Lessons Learned

- Flight Test in PPP revealed anomaly that was also later detected in simulation of aircraft performance

- Pre Production Prototype (PPP) aircraft & simulators facilitate early user evaluation resulting in 1 configuration for training, TTP, and test

We Can Do Better…

Ideas, concepts and information will b
represented and exchanged via electro

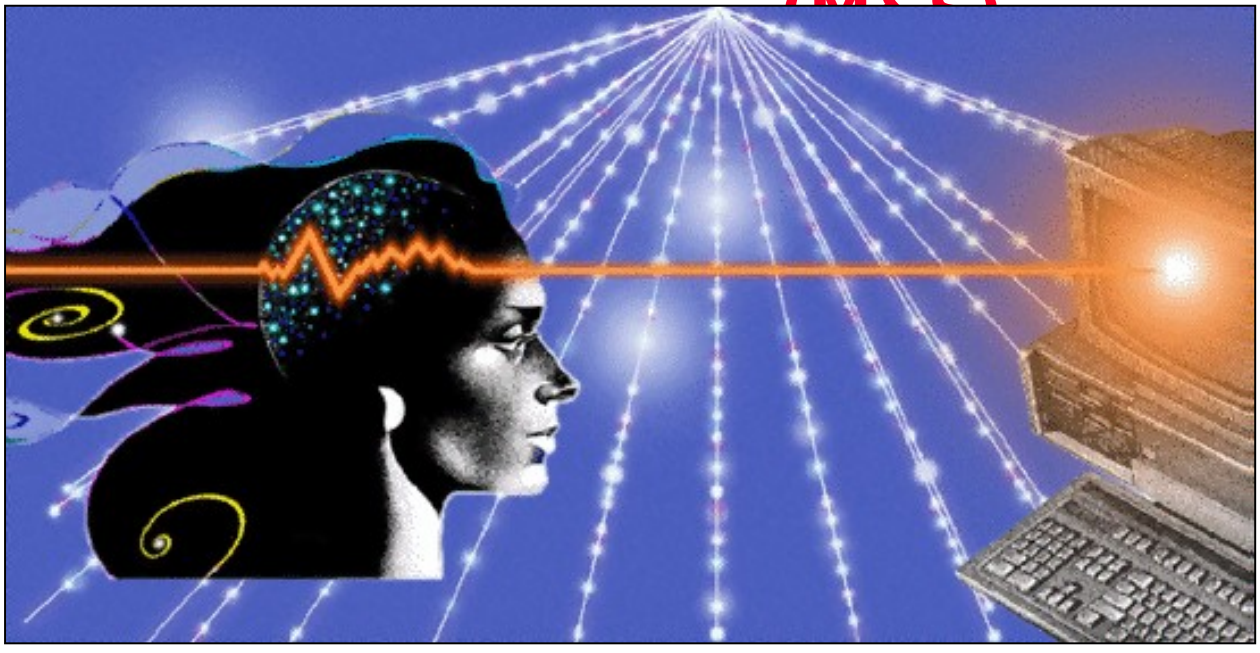
Acquisition Process

To Achieve the Productivity Promised by Digital Information, the Acquisition Process Must Adapt to Digital Technology:

- ***Internet***
- ***E-mail***
- ***E-commerce***
- ***Virtual reality***

Acquisition in Bits

Medium of digital information exchange in acquisition will be in Models and Simulations (M&S)



- **Human Brain can integrate no more than 7-9 unrelated concepts**
- **Illustration of 81 items interacting w/ each other… 6,480 possible interactions to integrate**

M&S provide the tools for evaluating complex systems with numerous sub-components and interactions

If a Picture is Worth a Thousand Words …

… What Is a Simulation Worth?

Simulations address:

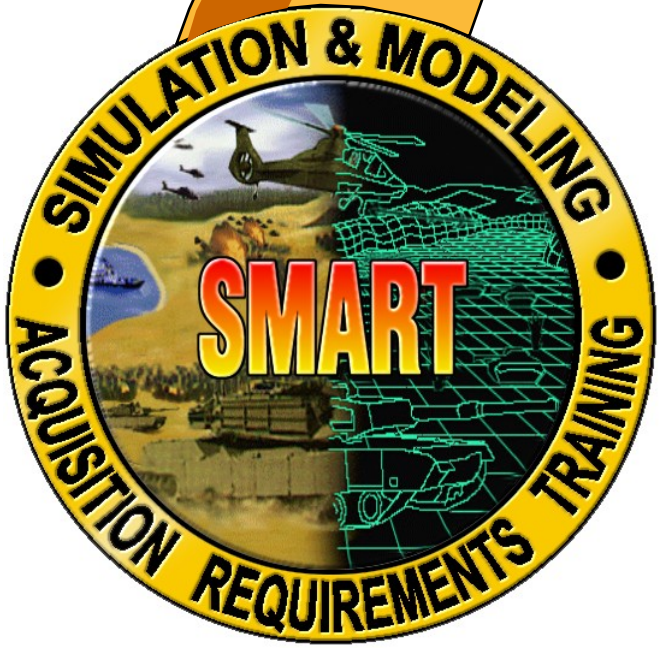
- **detail complexity - multiple components**
- **dynamic complexity - cause and effect with regard to time and space**

Simulations used for platform development can be the genesis of training simulations/simulators!

"If a picture is worth a thousand words, then a digital simulation is worth a thousand pictures!"

Paul J. Hoeper, ASA(ALT)

Simulation and Modeling for Acquisition, Requirements and Training (SMART)



The Army's vision for SMART is a process in which we capitalize on Modeling and Simulation (M&S) technology to address the issue of system development and life-cycle costs through the combined efforts of the requirements, training and

What Will SMART Achieve?

- **Reduced Total Ownership Cost (TOC), Time to Initial Operating Capability (IOC), and Logistics Tail**

- **Increased Supportability, Maintainability, and Military Worth**

- **More Effective, Cost Efficient Training at Individual, Crew, and System Level**

Applying SMART to Aviation Acquisition

- RFPs as simulations
- Proposals as models/objects exercised in an authoritative simulation

Effective Application of SMART in Aviation …

… Leverage Technology Developments:

- **Intelligent Interface Agents for Program Managers**
  - Digital Product Descriptions may Lead to Info Overload … How to Manage?
- **Neural Networks/Fuzzy Logic Applications**
  - Concept Evaluation
  - Total Ownership Costs
  - Doctrine
- **Voice Recognition Technology**
  - Generate Simulation Scenarios via Voice Recognition Input
- **Service Life Prediction Technology**
  - Failure/Wear Prediction
- **Multi-agent Behavior & Causal Network Tools**
  - System of Systems Analysis
  - Linkage of Performance Requirements & System Components
  - Doctrine

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